



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/565,284

01/20/2006

Masaru Nakakita

28951.5462

7118

53067 7590 03/26/2008

STEPTOE & JOHNSON LLP
1330 CONNECTICUT AVE., NW
WASHINGTON, DC 20036

EXAMINER

GARCIA, CARLOS E

ART UNIT

PAPER NUMBER

2627

MAIL DATE

DELIVERY MODE

03/26/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,284	Applicant(s) NAKAKITA ET AL.	
	Examiner CARLOS E. GARCIA	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/20/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless – (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 7-8, 11, 14-18, 20-21, 24, 27-31, 33-34 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Koishi (US 6,683,755).

Re claims 1, 14 and 27: Koishi discloses a negative pressure utilization type of slider (as shown in Fig.3) comprising: a head 62 for performing recording on a disk or reproducing from the disk; and an air bearing surface (the air bearing surface is composed of all surfaces facing the disk medium) formed in a surface facing the disk by a plurality of generally flat surfaces (as shown in Fig.3; the slider air bearing surface is composed of various surfaces such as 72, 82, 56 and 58) for floating from the disk by an air flow caused by rotation of the disk, the generally flat surfaces differing in height from each other (see Fig.4), the air bearing surface having an air inflow surface 56, a positive pressure generating surface 54 and a negative pressure generating surface 72 respectively formed in this order from an air flow incoming side (as shown in Fig.3-4), wherein the air inflow surface has a groove configuration surface 82 formed to extend from the disk inner peripheral end toward the disk outer peripheral end of the air inflow surface (the groove surface 82 extends from one end to the other as shown in Fig.3, from the ends of rails 66 and 68), the groove configuration surface being lower in height than the air inflow surface (see Fig.3-4; col.6, lines 31-42; col.7, lines 3-12).

Re claims 2, 15 and 28: Koishi further discloses wherein the air bearing surface has surfaces of three stages differing in height (as shown in Fig.4), the surfaces of the three stages comprising an upper stage surface highest in height 54, a lower stage surface lowest in height 72 and a middle surface 56 lower than the upper stage surface and higher than the lower stage surface, the positive pressure generating surface, the air inflow surface and the negative pressure generating surface being formed on the upper stage surface, the middle surface and the lower stage surface, respectively (see col.7, lines 23-53).

Re claims 3, 16 and 29: Koishi further discloses wherein the groove configuration surface is formed flush with the negative pressure generating surface (as shown in Fig.4).

Re claims 4, 17 and 30: Koishi further discloses wherein the air inflow surface extends to the air flow incoming end (as shown in Fig.3; the surface 56 extends towards the inflow incoming end such as 28a).

Re claims 5, 18 and 31: Koishi further discloses wherein the groove configuration surface is distant from the air flow incoming end by at least 20 μm (see col.7, lines 10-12; the length or distance of the groove surface 82 extends to at least a range of 10-90 μm).

Re claims 7, 20 and 33: Koishi further discloses wherein the head is a magnetic head (see col.6, lines 39-43).

Re claims 8, 21 and 34: Koishi further discloses wherein the reproducing head is composed of a magnetoresistive element (inherent in the art).

Re claims 11, 24 and 37: Koishi further discloses a disk device (as shown in Fig.1) including the slider according as discussed above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6, 9, 10, 12, 13, 19, 22, 23, 25, 26, 32, 35, 36 and 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koishi in view of Applicants Admitted Prior Art (AAPA). The teachings of Koishi have been discussed previously.

Re claims 6, 19 and 32: Koishi discloses the claimed invention except for wherein the groove configuration surface has a width of at least 30 μm .

It would have been obvious through routine experimentation and optimization in the absence of criticality to have the groove as shown by Koishi to be at least 30 μm since in the AAPA (Spec. page 21, lines 1-3) the standard femto-slider dimensions are

0.7 x 0.87 mm, the groove which extends from one inner peripheral end to an outer peripheral end of the slider must be at least 30 μm , since the applicant has not disclosed that solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with any other standard slider having a width dimension larger than 30 μm .

Re claims 9, 10, 22, 23 and 35-36: Koishi discloses the claimed invention except for the air bearing surface having an area of not more than 1 mm^2 or 0.5 mm^2 .

It would have been an obvious matter of design choice to use a standard femto-slider with dimensions of 0.7 x 0.87 mm which would have an air bearing surface area of around 0.609 mm^2 , since such a modification would have involved a mere change in the size of a component for the purpose of evaluating the relationship between the air bearing surface and the atmospheric pressure variation using the next generation slider, such as the femto-slider. Furthermore, absent a statement of criticality, a change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

Re claims 12, 13, 25, 26 and 38-39: Koishi further discloses means for recording or reproducing or both recording and reproducing in a disk region (as discussed above, the means for recording/reproducing is performed by a transducer or head 62).

Koishi discloses the claimed invention except for a relative speed between the slider and the disk is not higher than 10 m/s or 7 m/s.

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to test the slider with the groove configuration surface in both low and high speed regions of a disk region which is used for recording/reproducing, as disclosed in AAPA (see Spec. page19, lines 10-32) in order to determine the effects the groove configuration surface has on the floating height of a standard slider.

Conclusion

5. The prior art made of record in PTO-892 Form and not relied upon is considered pertinent to applicant's disclosure.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos E. Garcia whose telephone number is 571-270-1354. The examiner can normally be reached on 8:30 am to 5:00 pm, Monday thru Thursday and 8:30 to 4:00 pm, Fridays. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

Art Unit: 2627

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Carlos E. Garcia

3/29/2008

/Andrea L Wellington/

Supervisory Patent Examiner, Art Unit 2627